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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/706,068	11/03/2000	Abdellatif Bellaouar	TI-31011	6639

7590 08/10/2004

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EXAMINER	
CHANG, EDITH M	
ART UNIT	**PAPER NUMBER**
2637	7

DATE MAILED: 08/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/706,068	BELLAOUAR, ABDELLATIF	
	Examiner	Art Unit	
	Edith M Chang	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 28 2004 have been fully considered but they are not persuasive.

Argument: Bjerede does not disclose or suggest the presently claimed invention including *the first frequency synthesizer* coupled to the second input of the IF processor *for providing* the first combining signal of one of a plurality of possible frequency separated from one another by a raster component of the desired frequency channel spacing in claim 1.

Response: Bjerede discloses the first frequency synthesizer (100 FIG.9) coupled to the second input of the IF processor (FIG.9 50-98 is the IF processor), and performs the function limitation *for providing* the first combining signal of one of a plurality of possible frequency separated from one another by a raster component of the desired frequency channel spacing (column 1 lines 60-65, column 5 lines 30-35 & 45-50, column 6 lines 22-26 wherein the reference frequency is selected in terms of or in relation to the channel spacing). Therefore, Bjerede discloses the invention as cited in the claim.

Argument: Consequently, one can see that the oscillator 100 does not provide signals to IF processor 28.

Response: FIG.9 is a diagrammatic view of a preferred embodiment of the intermediate frequency processor (28) depicted in FIG.2. The 100 of FIG.9 does provide signal to IF processor (FIG.9 50-98 perform the IF processing, column 16 lines 1-10) via the second input of 98.

Argument: Additionally, whether or not Hafez discloses a phase lock loop and whether or not one would consider modifying Bjerede is of no moment since the resulting construction would still in no way disclose or suggest the presently claimed invention.

Response: Hafez teaches the comparison frequency generator for generating a comparison frequency corresponding to the raster component (32 Fig.2/112 Fig.9 where the 32/112 is the comparison frequency generator, the 12.5k is the raster component). Implementing the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to provide the output phase signals of the reference signals. The suggestion/motivation for doing so would have been to provide the apparatus the low noise and low power frequency synthesizers (column 3 lines 20-25, lines 34-37). Therefore, it would have been obvious to combine Hafez et al.'s teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

Argument: Further, whether or not Boesch teaches phase lock loop synthesis or whether or not one of ordinary skill in the art would consider modifying Bjerede is of no moment since the resulting construction would still in no way disclose or suggest the presently claimed invention.

Response: Bjerede et al. does not explicitly specify the channel spacing for WCDMA, however Boesch teaches the phase locked loops/synthesis for WCDMA (60 FIG.2, column 1 lines 15-21, column 4 lines 16-35) provided in a WCDMA transmitter. As Bjerede et al.'s apparatus is for the wireless telephone, having the WCDMA teaching by Boesch in the Bjerede et al.'s apparatus to accommodate the WCDMA. The suggestion/motivation for doing so would have been to provide a WCDMA transmitter with an efficient and low cost radio

apparatus (column 2 lines 3-11). Therefore, it would have been obvious to combine Boesch's teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

Argument: Whether or not Khlat discloses a PLL frequency synthesizer and whether or not Bjerede could be modified is of no moment since the resulting construction would still in no way disclose or suggest the presently claimed invention.

Response: Bjerede et al. does not explicitly specify the channel spacing for UMTS, however Khlat teaches the PLL frequency synthesizer for UMTS (FIG.1, column 49-55). Having the UMTS teaching by Khlat in the Bjerede et al.'s apparatus to provide a UMTS transmitter. The suggestion/motivation for doing so would have been to provide an efficient and low noise fractional-N synthesizers to the UMTS transmitter (column 1 lines 43-45, column 2 lines 13-17). Therefore, it would have been obvious to combine Khlat's teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

The rejections are upheld as the following:

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 8-15, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1).

Regarding **claims 1 & 11**, except explicitly specify the comparison frequency generator in the frequency synthesizer, Bjerede et al. discloses all subject matter claimed: An apparatus and its methods for producing an RF transmission signal including a plurality of frequency channels (column 1 lines 60-65, column 5 lines 45-50, column 6 lines 22-26, where the apparatus includes multiple frequency channels, the channel spacing is suggested). It comprises: an IF processor having a first input for receiving a baseband signal and a second input for receiving a first combining signal (28 FIG.2/50-98 FIG.9 is the IF processor, column 9 lines 19-21 wherein the local oscillator provides the first combining signal to IF processor in FIG.2 or the input of 98/output of 100 FIG.9 is the first combining signal), the IF processor for combining the baseband signal with the first combining signal to produce an IF signal (26-28 FIG.2, 26-98 FIG.9); an RF processor having a first input coupled to the IF processor for receiving the IF signal and a second input for receiving a second combining signal (30 FIG.2/52-114 FIG.9 is the RF processor, 54 FIG.2/FIG.9 provides the second combining signal), the RF processor for combining the IF signal with the second combining signal to produce an RF transmission signal including a plurality of frequency channels separated by a desired frequency channel spacing (column 5 lines 45-50, where the channel spacing is suggested); a first frequency synthesizer coupled to the second input of the IF processor for providing the first combining signal (100 FIG.9 is the frequency synthesizer). However Hafez et al. teaches the comparison frequency generator for generating a comparison frequency corresponding to the raster component (32 Fig.2/112 Fig.9 where the 32/112 is the comparison frequency generator, the 12.5k is the raster component). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s

apparatus. The suggestion/motivation for doing so would have been to provide the apparatus the low noise and low power frequency synthesizers (column 3 lines 20-25, lines 34-37). Therefore, it would have been obvious to combine Hafez et al.'s teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

Regarding **claims 2 & 12**, Bjerede et al. does not specify the comparison frequency is an integer multiple of the raster component, however Hafez et al. teaches the comparison frequency is an integer multiple of the raster component (32 Fig.2 where the 1.85M is an integer multiple of the raster component, 1.5625k or 12.5K divided by N=8 , column 6 lines 56-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 3 & 13**, Bjerede et al. does not specify the comparison frequency is equal to the raster component, however Hafez et al. teaches the comparison frequency is equal to the raster component (Fig.2 provides the model to get the comparison frequency being equal to the raster component when adjust the N accordingly to the raster provided by the system). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 4-5, 10, 14-15, & 20**, Bjerede et al. does not specify an integer/type-1 phase locked loop, however Hafez et al. teaches an integer/type-1 phase locked loop (Fig.2 having 1/N feedback and the phase detector 30 being coupled to the loop filter 34 without use of a charge pump). At the time of the invention, it would have been obvious to a person of ordinary

skill in the art to have the integer phase locked loop taught by Hafez et al. in the first frequency synthesizer of Bjerede et al.'s apparatus to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 8 & 18**, Bjerede et al discloses a second frequency synthesizer coupled to the second input of said RF processor for providing the second combining signal (54 FIG.2) but does not specify the comparison frequency generator in the second frequency synthesizer. However Hafez et al. teaches the comparison frequency generator (32 Fig.2 for generating the comparison frequency). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement the frequency synthesizer taught by Hafez et al. in Bjerede et al.'s RF synthesizer to generate a RF frequency (which is greater than the raster component) to have a low noise and low power frequency synthesizer (column 3 lines 20-25, lines 34-37).

Regarding **claims 9 & 19**, Bjerede et al discloses the comparison frequency corresponds to a fu component of the desired frequency channel spacing other than the raster component (column 9 lines 25-33, where the 300k is the desired frequency channel spacing).

4. Claims 6 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1) as applied to claims 1 and 11 above, and further in view of Khlat (US 6069535).

Regarding **claims 6 & 16**, Bjerede et al. does not explicitly specify the channel spacing for UMTS, however Khlat teaches the PLL frequency synthesizer for UMTS (FIG.1, column 49-55). At the time of the invention, it would have been obvious to a person of ordinary skill in the

art to have the UMTS teaching by Khlat in the Bjerede et al.'s apparatus to provide a UMTS transmitter. The suggestion/motivation for doing so would have been to provide an efficient and low noise fractional-N synthesizers to the UMTS transmitter (column 1 lines 43-45, column 2 lines 13-17). Therefore, it would have been obvious to combine Khlat's teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

5. Claims 7 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerede et al. (US 5722040) in view of Hafez et al. (US 6463112 B1) as applied to claims 1 and 11 above, and further in view of Boesch (US 6556545 B1).

Regarding **claims 7 & 17**, Bjerede et al. does not explicitly specify the channel spacing for WCDMA, however Boesch teaches the phase locked loops/synthesis for WCDMA (60 FIG.2, column 1 lines 15-21, column 4 lines 16-35) provided in a WCDMA transmitter. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the WCDMA teaching by Boesch in the Bjerede et al.'s apparatus to provide a WCDMA transmitter. The suggestion/motivation for doing so would have been to provide a WCDMA transmitter with an efficient and low cost radio apparatus (column 2 lines 3-11). Therefore, it would have been obvious to combine Boesch's teaching with Bjerede et al. to obtain the invention as specified in the claim(s).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 703-308-7728. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
July 30, 2004

YOUNG T. TSE
PRIMARY EXAMINER